AMENDMENTS TO THE CLAIMS:

Please amend the claims as shown below. This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (currently amended) A method for femtosecond nondegenerate four-wave mixing in charge-transfer materials to produce an ultrafast, transient holographic grating, which comprises the steps of:

(a) preparing a mixture of a charge-donor species, wherein the charge-donor species includes semiconducting polymers that absorb light in a first wavelength region with a charge-acceptor species, such that charge transfer occurs between the charge-donor species and the charge-acceptor species ~~in the absence of an externally applied dc electric field~~ when the mixture is excited by the light within the first wavelength region;

(b) exciting the mixture with two femtosecond scale pulsed light beams within the first wavelength region, the two pulsed light beams overlapping in the mixture and having an angle therebetween, each of the two pulsed light beams having a pulse width less than the time required for charge to be transferred back from the charge-acceptor species to the charge-donor species, whereby ~~a~~ an ultrafast, transient holographic grating is formed in the region of the mixture surrounding the overlapping of the two light beams;

(c) passing light within a second wavelength region through the holographic grating region of the blend, wherein the light within the second wavelength region is chosen so as not to be absorbed by the mixture in the absence of charge transfer; and

(d) detecting the diffracted light within the second wavelength region.

2. (currently amended) The method for femtosecond nondegenerate four-wave mixing in charge-transfer materials to produce an ultrafast, transient holographic grating as described in claim 1, wherein light within the second wavelength region is absorbed by species in the mixture which undergo charge transfer.

3. (currently amended) The method for femtosecond nondegenerate four-wave mixing in charge-transfer materials to produce an ultrafast, transient

holographic grating as described in claim 1, wherein the charge-donor species includes conducting polymers which undergo photoinduced charge transfer to an acceptor species.

4. (currently amended) The method for femtosecond nondegenerate four-wave mixing in charge-transfer materials to produce an ultrafast, transient holographic grating as described in claim 1, wherein the charge-acceptor species includes conducting polymers which undergo photoinduced charge transfer from a donor species.

5. (currently amended) The method for femtosecond nondegenerate four-wave mixing in charge-transfer materials to produce an ultrafast, transient holographic grating as described in claim 1, wherein the charge-donor species are selected from the group consisting of poly(phenylene-vinylenes), poly(3-alkyl thiophenes), porphyrins, phthalocyanines, polyphenylenes, and semiconductor nanocrystals.

6. (currently amended) The method for femtosecond nondegenerate four-wave mixing in charge-transfer materials to produce an ultrafast, transient holographic grating as described in claim 1, wherein the charge-acceptor species are selected from the group consisting of poly(phenylene-vinylenes), poly(3-alkyl thiophenes), porphyrins, phthalocyanines, fullerenes, polyphenylenes, and semiconductor nanocrystals.

7. (currently amended) The method for femtosecond nondegenerate four-wave mixing in charge-transfer materials to produce an ultrafast, transient holographic grating as described in claim 1, wherein the charge-donor polymeric molecules are selected from the group consisting of poly[2-methoxy,5-(2'-ethylhexoxy)-1,4-phenylene vinylene] (MEH-PPV), poly(3-hexyl thiophene) and a five-ring oligomer of MEH-PPV.

8. (currently amended) The method for femtosecond nondegenerate four-wave mixing in charge-transfer materials to produce an ultrafast, transient holographic grating as described in claim 1, wherein the charge-acceptor molecules are selected from the group consisting of C_{60} and tetracyano-p-quinodimethane derivatives.